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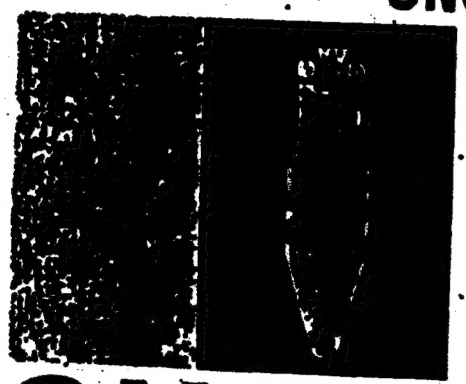

SAMOS

[illegible] SATELLITE RECONNAISSANCE SYSTEM

PHOTOGRAPHIC

REQMTS PROVIDED BY:
UNITED STATES INTELLIGENCE BOARD
-SATELLITE INTELLIGENCE REQMTS COMMITTEE

DEVELOPMENT AGENCY
UNITED STATES AIR FORCE

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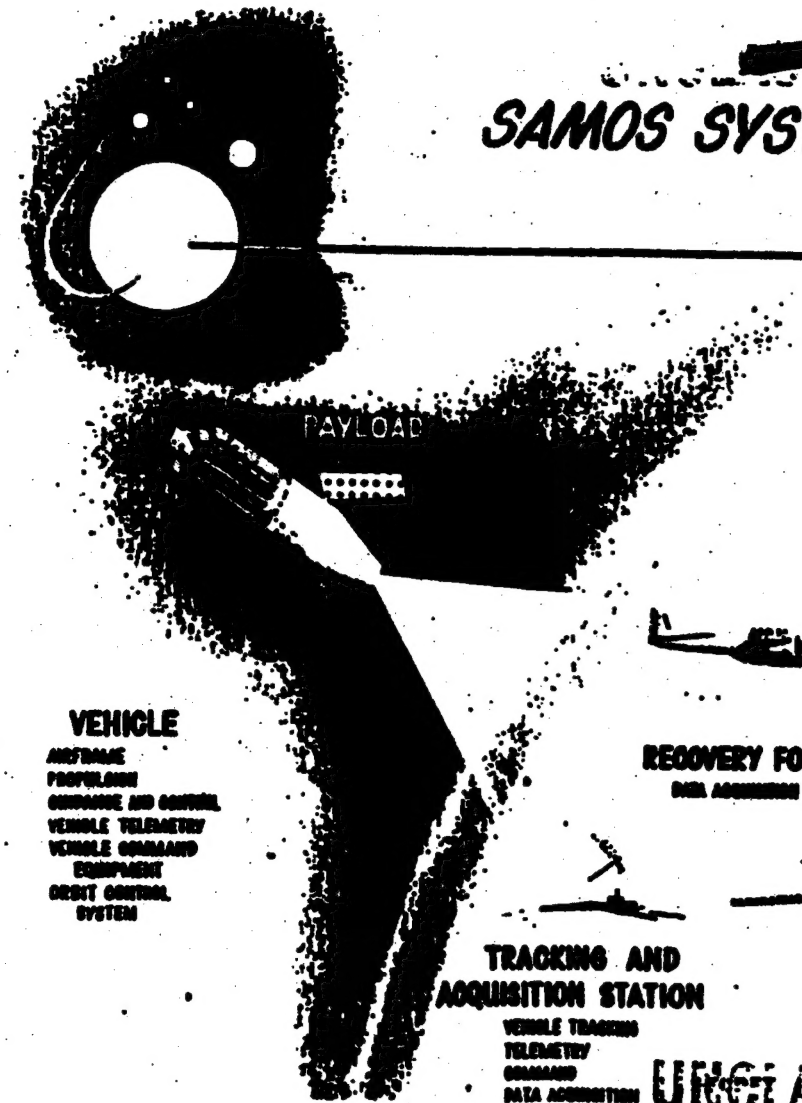
604018

Declassified with deletions
E.O. [illegible]
NLE Case 94-[illegible]
By [illegible] NLE Date [illegible]

Office of the Staff Secretary: Records of Paul T. Carroll, Andrew J. Goodpaster, L. Arthur Minnich and Christopher H. Russell, 1952-61.
Subject Series
Alphabetical Subseries
Box 15
"Intelligence Matters (14) [March-May 1960]"

AF-59 0:00 17335

SAMOS SYSTEM ELEMENTS



VEHICLE

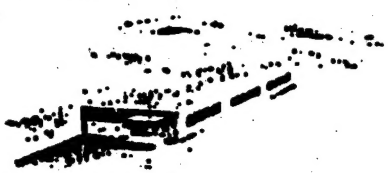
AIRFRAME
PROPULSION
GUIDANCE AND CONTROL
VEHICLE TELEMETRY
VEHICLE COMMAND EQUIPMENT
ORBIT CONTROL SYSTEM

SATELLITE LAUNCH

LAUNCH
ASSEMBLY AND CHECKOUT
GROUND SUPPORT EQUIPMENT

RECOVERY FORCE

DATA ACQUISITION



SATELLITE TEST CENTER

SYSTEM CONTROL CENTER
DATA DISPLAY AND ASSESSMENT
DATA DISSEMINATION TO USERS

TRACKING AND ACQUISITION STATION

VEHICLE TRACKING
TELEMETRY
COMMAND
DATA ACQUISITION

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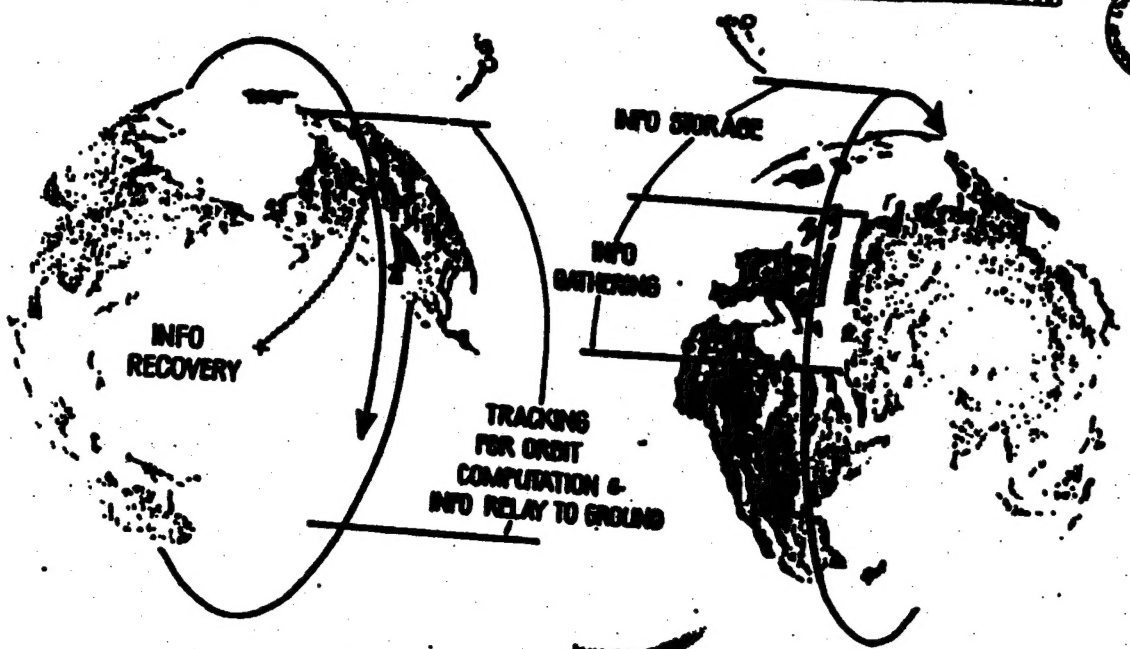
SAMOS CONCEPT

150-300 S.MI. ALTITUDE - PHOTO



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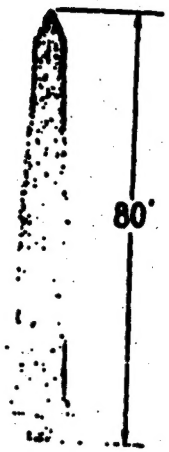
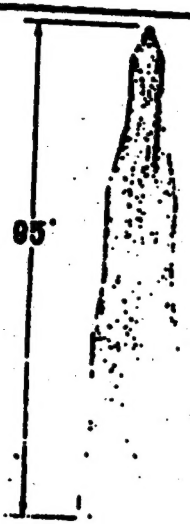
TYPICAL SIZE AND WEIGHT

THOR
AGENA B





ATLAS
AGENA B

AGENA B	EMPTY WEIGHT	1,400
	LAUNCH WEIGHT	16,150
THOR	EMPTY WEIGHT	8,830
	LAUNCH WEIGHT	107,170
TOTAL BOOSTER AND AGENA WEIGHT AT LAUNCH		123,320 LBS

AGENA B	EMPTY WEIGHT	1,400
	LAUNCH WEIGHT	19,800
ATLAS	EMPTY WEIGHT	14,150
	LAUNCH WEIGHT	258,130
TOTAL BOOSTER AND AGENA WEIGHT AT LAUNCH		277,930 LBS

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SAMOS

- A SATELLITE RECONNAISSANCE SYSTEM IS COMPLEX WITH MANY ADVANCED DEVELOPMENTS REQUIRED, BUT IT CAN BE MADE TO WORK

- DEVELOPMENT PROGRESSION REQUIRED DUE TO PRESENT STATE-OF-THE-ART LIMITATIONS:

  PHOTOGRAPHIC: 20' GROUND RESOLUTION → 3' OR LESS

  ACTIVE LIFE: 1 WEEK → 4 MONTHS → 1 YEAR

- THE DEVELOPMENT PROGRAM WILL INCLUDE FAILURES IN THE COURSE OF THE DEVELOPMENT EFFORT

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INTELLIGENCE REQUIREMENTS FOR SAMOS

PRIORITY I

PHOTOGRAPHIC - LOCATION OF OPERATIONAL ICBM SITES

PRIORITY II

A. *PHOTOGRAPHIC* - DESCRIPTIVE INFORMATION ON HIGH PRIORITY TARGET LIST ITEMS

PRIORITY III

A. *PHOTOGRAPHIC* - TECHNICAL CHARACTERISTICS OF HIGH PRIORITY LIST ITEMS

PRIORITY IV

[redacted]

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OUTLINE REQUIREMENTS
USIB - 6 JULY '60

PHOTOGRAPHIC

"GENERAL SEARCH" - 20' "RECOGNIZABILITY"

- 1ST PRIORITY - TO LOCATE SUSPECTED ICBM LAUNCH SITES BETWEEN NOW & END OF 1962
  REPETITIVE SEARCH - ONCE EACH MONTH INITIALLY

E-2 (LIMITED SEARCH CAPABILITY) 1ST FLT - APR '61

E-6 1ST FLT - JAN '62

"DESCRIPTIVE" INFORMATION - 5' "RECOGNIZABILITY"

- 2ND PRIORITY - COVERAGE OF HIGHEST PRIORITY TARGET CATEGORY & SUSPICIOUS LOCATION
  LAUNCH & CONTROL OF THESE - MISSION ON SHORT NOTICE

E-6 1ST FLT - SEPT '61

"TECHNICAL CHARACTERISTICS" - BETTER THAN 5' "RECOGNIZABILITY"

- 3RD PRIORITY - HIGH RESOLUTION COVERAGE TO DETERMINE TECHNICAL CHARACTERISTICS OF HIGHEST PRIORITY TARGETS BY THE END OF 1962

ADVANCED RESEARCH PROJECTS AGENCY

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OUTLINE REQUIREMENTS
USIB - 6 JULY '60

PHOTOGRAPHIC

"GENERAL SEARCH" - 20' "RECOGNIZABILITY"

- 1ST PRIORITY - TO LOCATE SUSPECTED ICBM LAUNCH SITES BETWEEN NOW & END OF 1962

  REPETITIVE SEARCH - ONCE EACH MONTH INITIALLY

"DESCRIPTIVE" INFORMATION - 5' "RECOGNIZABILITY"

- 2ND PRIORITY - COVERAGE OF HIGHEST PRIORITY TARGET CATEGORY & SUSPICIOUS LOCATION

  LAUNCH & CONTROL OF THESE - MISSION ON SHORT NOTICE

"TECHNICAL CHARACTERISTICS" - BETTER THAN 5' "RECOGNIZABILITY"

- 3RD PRIORITY - HIGH RESOLUTION COVERAGE TO DETERMINE TECHNICAL CHARACTERISTICS OF HIGHEST PRIORITY TARGETS BY THE END OF 1962

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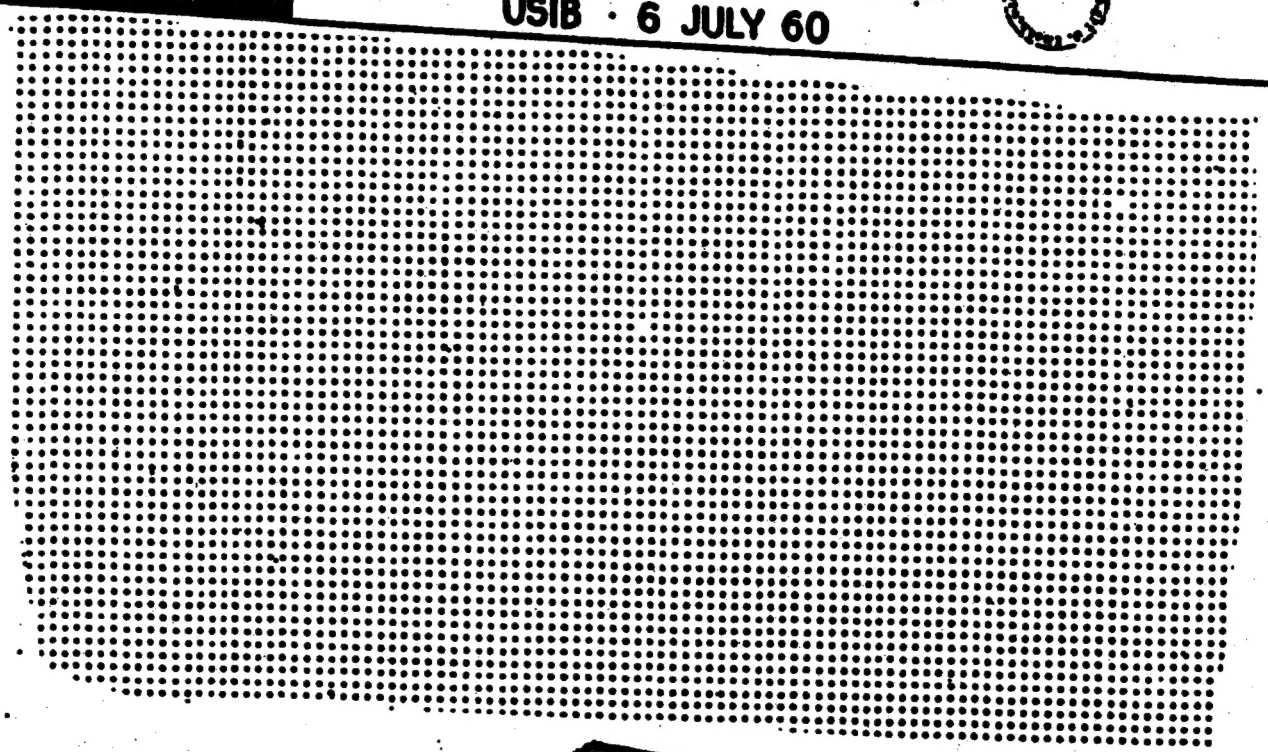
OUTLINE REQUIREMENTS

USIB · 6 JULY 60



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EXAMPLE OF TARGET THAT MAY BE IDENTIFIED AT DIFFERENT GROUND RESOLUTION

100 ft — CITIES, FORESTS, RAIL ALIGNMENT, INDUSTRIAL COMPLEXES, MAJOR MILITARY INSTALLATIONS, AND LARGE BODIES OF WATER.

20 ft — COMPONENTS OF MILITARY INSTALLATIONS, AIRBASE RUNWAYS, SUBMARINE BASES, MAJOR SURFACE TO AIR MISSILE SITES, ATOMIC ENERGY INSTALLATIONS, BALLISTIC MISSILE SITES, SURFACED SUBMARINES, LARGE AIRCRAFT AND MISSILE LAUNCHING PADS, IDENTIFICATION OF MAJOR SOVIET NAVAL FORCES.

[illegible] — LARGE AIRCRAFT AND KNOWN MISSILE CARRYING SUBMARINES, LOCATING SPECIAL WEAPONS, ABOVE GROUND ICBM AND IRBM FACILITIES, CAPACITY OF MILITARY STORAGE FACILITIES, IDENTIFICATION OF NAVAL SHIPS BY TYPES.

[illegible] ft — DETAILED INFORMATION ON MOST MILITARY AND INDUSTRIAL INSTALLATIONS, ALL AIRCRAFT, GROUND FORCES EQUIPMENT AND DISPOSITION, LARGE MISSILES, AAA SITES, STRUCTURAL SHIPBOARD CONFIGURATIONS, LEVELS OF MILITARY ACTIVITY.

1 ft — DETAILED TECHNICAL INFORMATION ON AIR, NAVAL AND GROUND FORCES EQUIPMENT AND INDUSTRIAL PRODUCTION PROCESSES.

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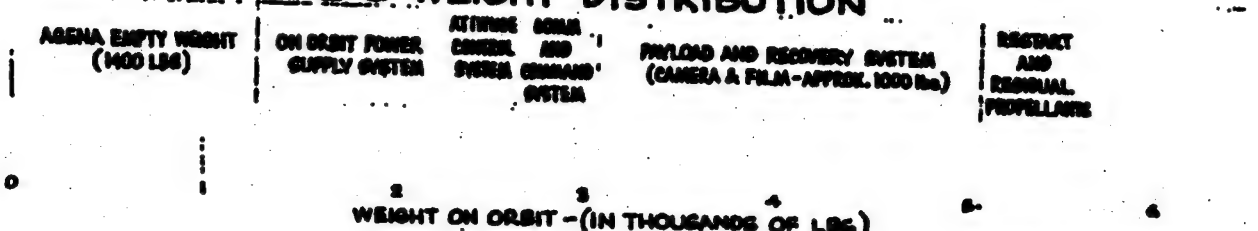
EISENHOWER LIBRARY

ORBITAL CAPABILITY

VEHICLE	WEIGHT ON ORBIT AT 150 N. MILES ALTITUDE:	WEIGHT ON ORBIT AT 261 N. MILES ALTITUDE:
THOR & AGENA B	2800 LBS	2600 LBS
ATLAS & AGENA B	6500 LBS	6200 LBS

SYSTEM	WEIGHT ON ORBIT AT 150 N. MILES ALTITUDE:	WEIGHT ON ORBIT AT 261 N. MILES ALTITUDE:
E-5	5700 LBS	4300 LBS
E-1		4100 LBS
E-2		4400 LBS
		4900 LBS

E-5 WEIGHT DISTRIBUTION



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CHARACTERISTICS
PHOTO PAYLOAD SYSTEMS

SYSTEM	DATA RETRIEVAL METHOD	RESOLUTION	SWATH WIDTH	OPERATING LIFE	MAX DAILY COVERAGE MILLION SQ N MI	TOTAL COVERAGE MILLION SQ N MI
E-1	READOUT	100′	87 N MI	10 DAYS	.57 (1 STA)	5.7
E-2	READOUT	20′	14.5 N MI	4 MOS	.033 (2 STA)	4.0
E-5	RECOVERY	5′	53 N MI	15-30 DA	0.6	4.9
E-6	RECOVERY	8′	200 N MI	5 DA	3.0	14.0

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VISUAL SENSORS CAPABILITIES

E-1 COMPONENT TEST PAYLOAD	E-2	E-5	E-6
TERRAIN FEATURES & COMMUNICATION CENTERS	IDENTIFY FEATURES & COMPLEXES	LEVEL OF MILITARY ACTIVITY	IDENTIFY FEATURES & COMPLEXES
AIRFIELDS	LARGE AIRCRAFT	IDENTIFY AIRCRAFT	LARGE AIRCRAFT
HARBOR FACILITIES & SHIPPING	SUBS-PIERS-SUPPORTING FACILITIES	IDENTIFY TYPES & USES [illegible] SURFACE MISSILE FACILITIES	SUBS-PIERS SUPPORTING FACILITIES
LOCATE INDUSTRIAL COMPLEXES	IDENTIFY INSTALLATIONS	IDENTIFY MATERIAL PRODUCTION	IDENTIFY INSTALLATIONS
SUSPECT CONSTRUCTION OF MISSILE SITES	LOCATE MISSILE SITES	IDENTIFY TYPE OF MISSILE SITE	LOCATE MISSILE SITES
FIRST FLIGHT - SEP 60 3 FLIGHTS STRIP CAMERA 6" FOCAL LENGTH	FIRST FLIGHT - APR 61 3 FLIGHTS STRIP CAMERA 36" FOCAL LENGTH	FIRST FLIGHT - SEPT 61 7 FLIGHTS PANORAMIC CAMERA 66" FOCAL LENGTH	FIRST FLIGHT - JAN 62 7 FLIGHTS PROBABLY A PANORAMIC CAMERA 24 TO 36" FOCAL LENGTH

[redacted]

UNCL[redacted]

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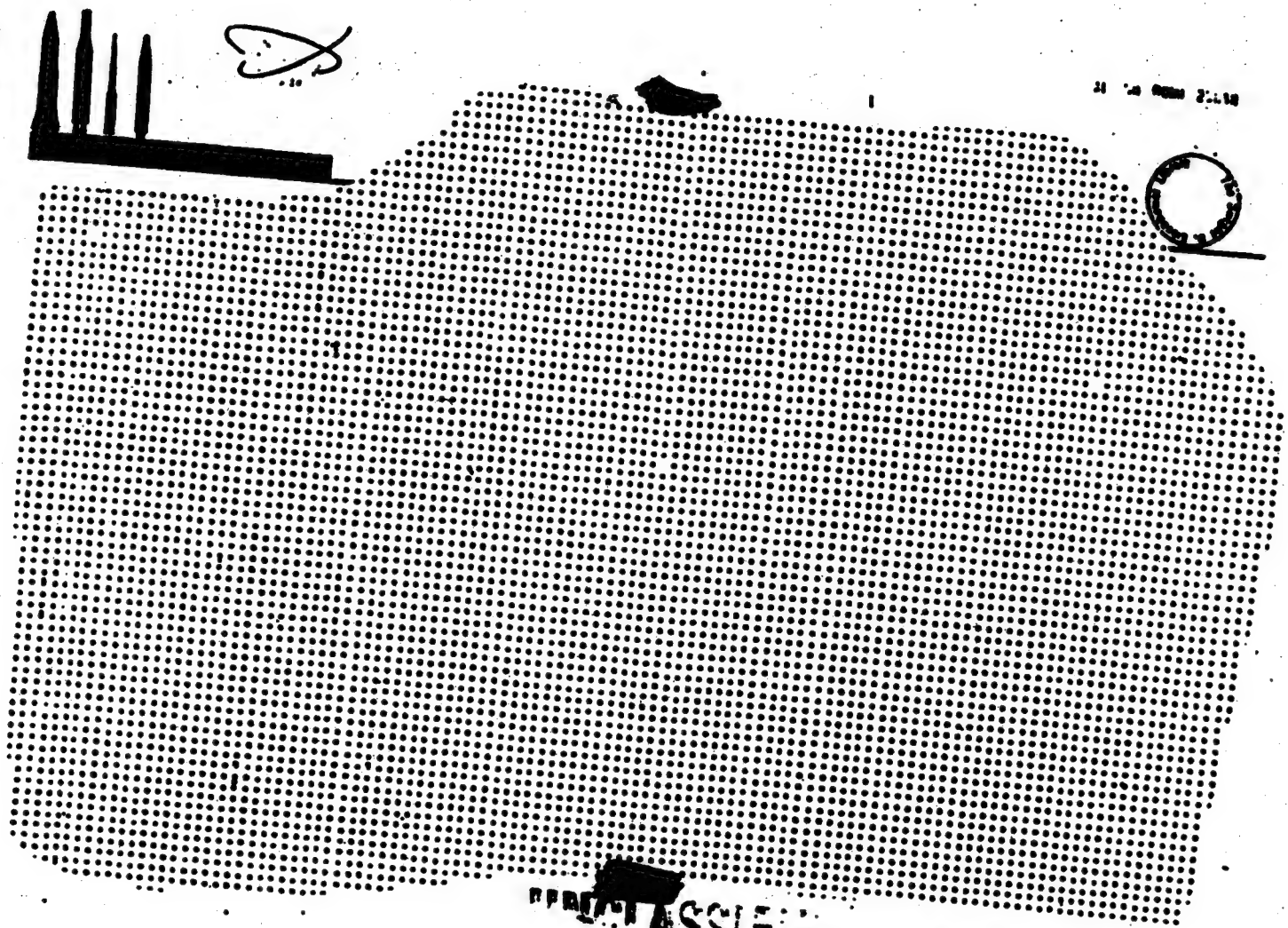

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SAMOS OUTPUTS

READOUT

READOUT TIME { - 25 MIN PER DAY
- 53 MIN PER DAY

PHOTO E-2 (20') PER MINUTE OF READOUT - 800 SQ MILES 90 FT OF 35 M PRIMARY RECORD = 12 - 9½" X 18" PHOTOS

RECOVERY

PHOTO E-5 (5') PER MISSION - 4.9 MILLION SQ N MI

E-6 (8') PER MISSION - 9.0 MILLION SQ N MI

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SAMOS E5 RECOVERY SEQUENCE

UNCLASS

SAMOS E-6 — A NEW APPROACH

- RELIABILITY (SHORT LIFE)
- LARGE AREA COVERAGE
- HIGH RESOLUTION
- EARLY CAPABILITY
- PRECISE OVERLAND RETRIEVAL
- BROADENED CONTRACTOR BASE
- COMPATIBLE WITH DATA PROCESSING EQUIPMENT
- UTILIZE EXISTING GROUND FACILITIES

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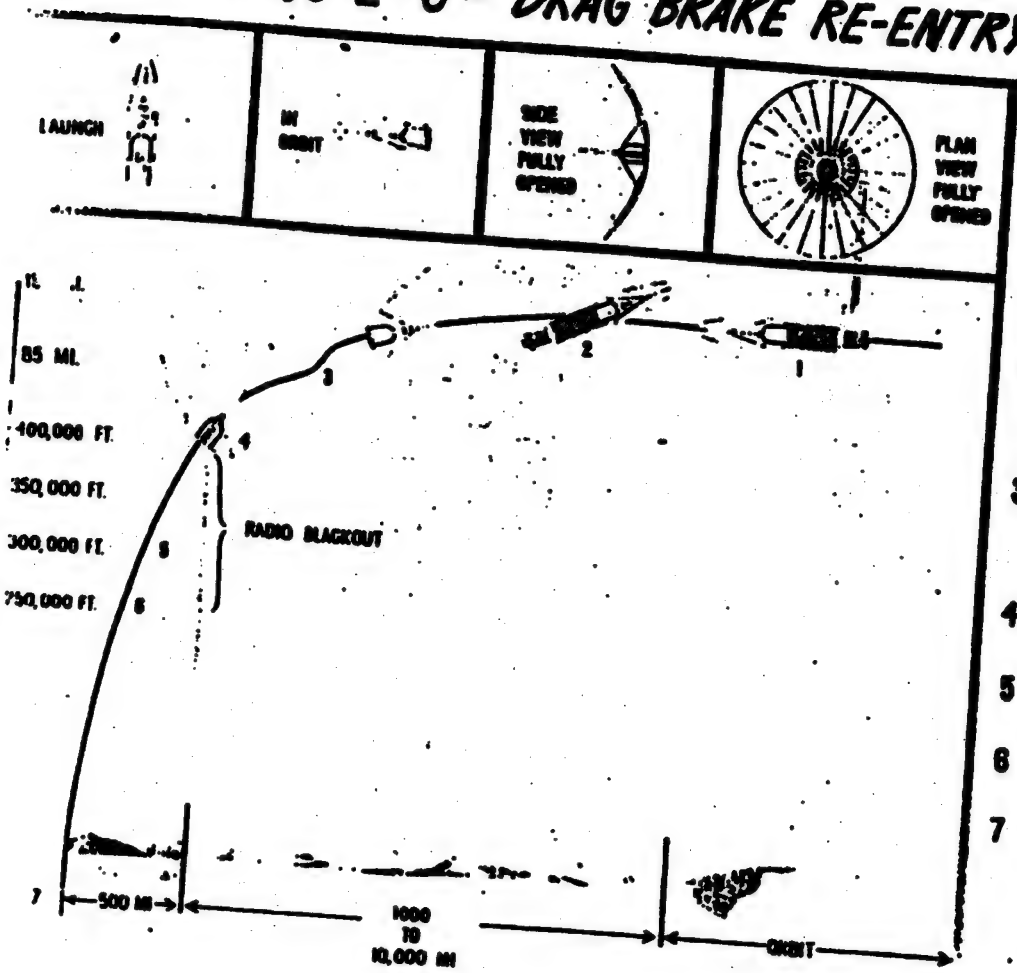
SAMOS E-6 – DRAG BRAKE RE-ENTRY SEQUENCE



1 VEHICLE IN ORBIT

2 REORIENTATION, RETRO FIRING & SEPARATION

3 MODULATE FOR RANGE CORRECTION

4 FULL OPEN

5 PEAK HEATING

6 PEAK DECELERATION

7 LANDING - 40 F.P.S.

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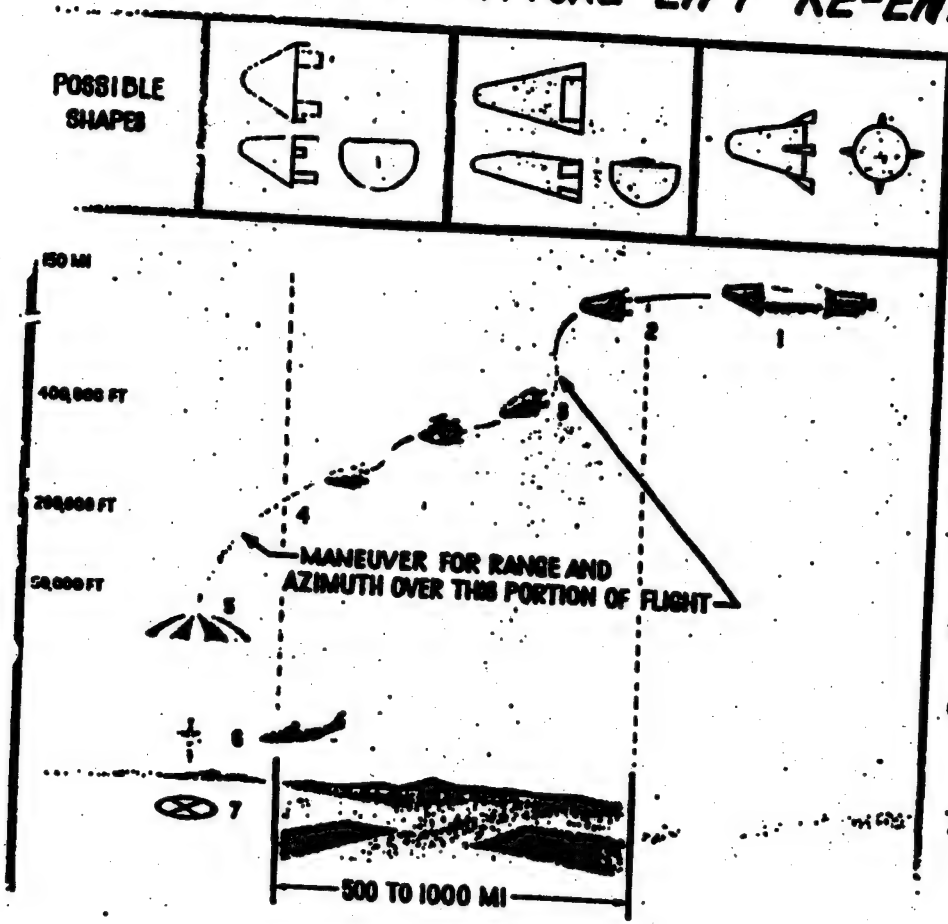
SAMOS E-6 - TYPICAL LIFT RE-ENTRY SEQUENCE



1 VEHICLE IN ORBIT

2 RETRO-ROCKET FIRING AND SEPARATION

3 RE-ENTRY AND RADIO BLACK-OUT-START RANGE AND AZIMUTH CORRECTIONS

4 POST-BLACKOUT-MACH 15 COMMUNICATE FOR TERMINAL GUIDANCE

5 PARACHUTE OPEN-MACH 0.6 TO 1.0

6 AIR PICKUP ATTEMPT POSSIBLE

7 IMPACT - 25 F.P.S.

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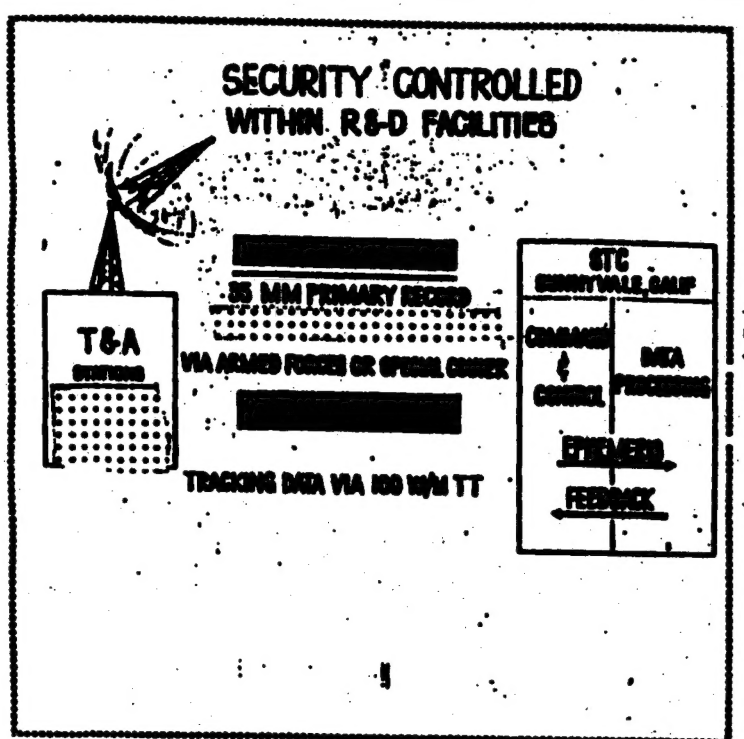
INTERIM READOUT R&D DATA FLOW



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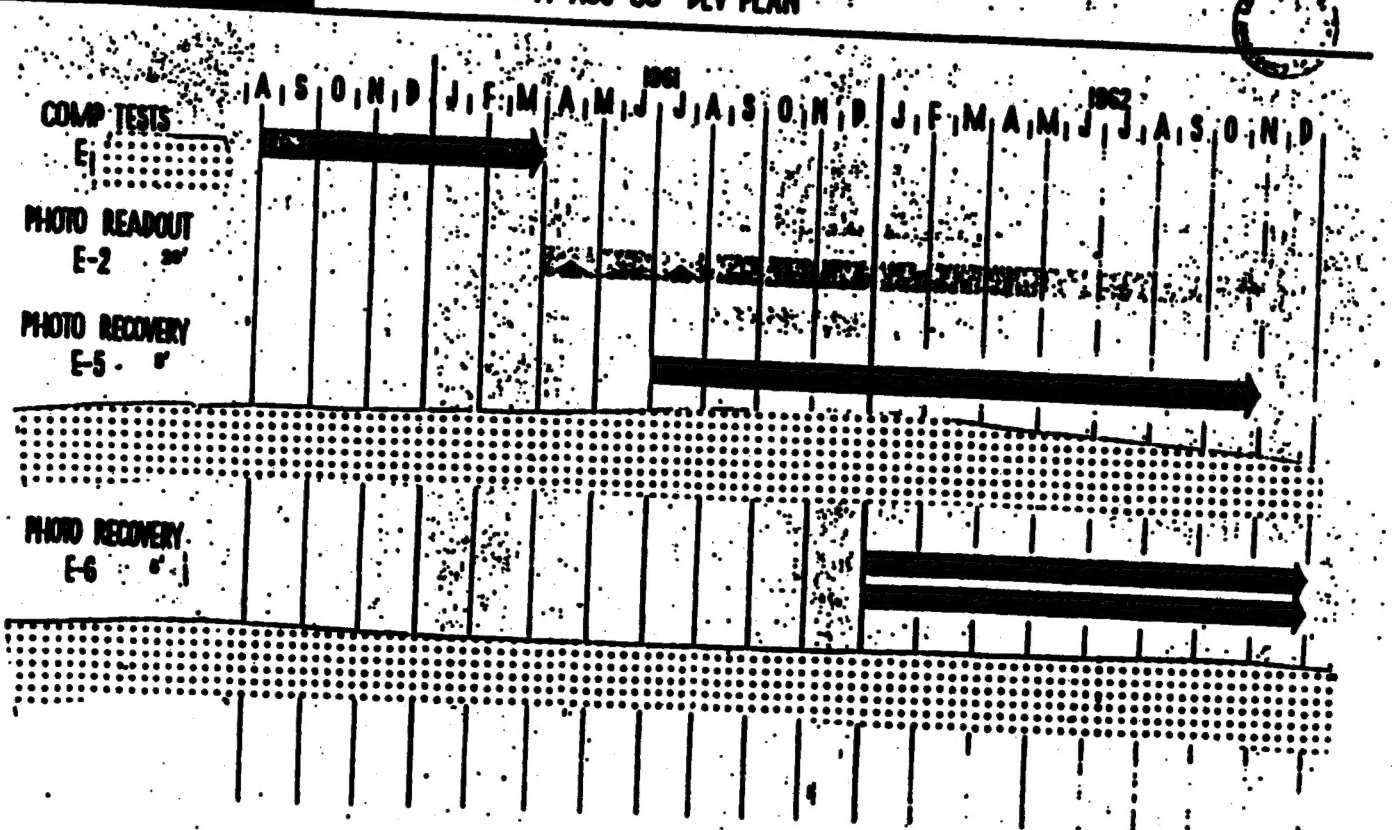
SAMOS LAUNCH SCHEDULE

11 AUG 60 DEV PLAN



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SUMMARY

ELEMENTS OF SAMOS RESEARCH AND DEVELOPMENT PROGRAM

- RECOVERY
  - E-6 PHOTO 5' RESOLUTION — 7
  - E-6 PHOTO 8' RESOLUTION — 7
  - DIAGNOSTIC RECOVERY — 4
- READOUT
  - COMPONENT TESTS PHOTO E-1 — 8
  - E-2 PHOTO 20' RESOLUTION — 2
  - — 1
- SPECIAL COMPONENT TESTS — 24 PLUS 5 UNASSIGNED
- LAUNCHINGS FROM PT. ARGUELLO — ATLAS/AGENA(THRU 1962)
- TRACKING STATIONS
- CONTROL - SATELLITE TEST CENTER - SUNNYVALE
- DATA PROCESSING
- RECOVERY CENTER - HAWAII

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[redacted]

SAMOS FUNDING STATUS
(IN MILLIONS).

REALIGNMENT OF PRESENT PROGRAM.
TECHNICAL DIRECTION AND SYSTEM INTEGRATION FOR PRESENT PROGRAM.
TOTAL PRESENT PROGRAM FOR FY 1961.
NEW RECOVERY PROGRAM.
ADDITIONAL BACK-UP TECHNICAL EFFORT.
ADDITIONAL BOOSTERS & AGENAS FOR FLEXIBILITY.
AGENA GROUND SUPPORT EQUIPMENT FOR NEW STANDS.
TOTAL ADDITIONAL PROGRAM

TOTAL REVISED FY 61 SAMOS PROGRAM

FY 1961 FUNDING REQUIREMENTS

[redacted]

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